ADDITIONAL GENERIC MERGERS IN BIGNONIACEAE[1]

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ABSTRACT

Five generic mergers in Bigoniaceae are proposed, largely as the result of palynological considerations. The proposed mergers are: *Orthotheca* with *Xylophragma*, *Neves-Armondia* with *Pithecoctenium*, *Paradolichandra* with *Parabignonia*, and both *Hanburyophyton* and *Pachyptera* with *Mansoa*. A new species, intermediate between *Mansoa* and *Pachyptera*, is described as *M. ventricosa* A. Gentry. New combinations required by the proposed mergers are: *Xylophragma heterocalyx* (Bur. & K. Schum.) A. Gentry, *Mansoa lanceolata* (DC.) A. Gentry, *M. alliacea* (Lam.) A. Gentry, *M. erythraea* (Dugand) A. Gentry, *M. hymenaea* (DC.) A. Gentry, *M. kerere* (Aubl.) A. Gentry, *M. kerere* var. *incarnata* (Aubl.) A. Gentry, *M. parvifolia* (A. Gentry) A. Gentry, *M. standleyi* (Steyerm.) A. Gentry, and *Parabignonia chodatii* (Hassler) A. Gentry. Transfer of *Neves-Armondia cordifolia* to *Pithecoctenium* necessitates a *nomen novum*, proposed as *P. hatschbachii* A. Gentry.

The palynological considerations summarized in the preceding paper suggest several additional taxonomic changes besides supporting various generic mergers previously proposed. It is the purpose of this paper to formally propose five generic mergers based in large part on this palynological evidence. These generic mergers include *Orthotheca* with *Xylophragma*, *Neves-Armondia* with *Pithecoctenium*, *Paradolichandra* with *Parabignonia*, and both *Hanburyophyton* and *Pachyptera* with *Mansoa*. The latter merger makes possible generic assignment of a problematical new species sharing features of *Pachyptera* and *Mansoa*.

ORTHOTHECA AND *XYLOPHRAGMA*

Xylophragma heterocalyx (Bur. & K. Schum.) A. Gentry, comb. nov.

Saldanhaea (?) *heterocalyx* Bur. & K. Schum. in Mart., Fl. Bras. 8(2): 254. 1897. TYPE: Brazil, Rio de Janeiro, *Glaziou 14109* (P, holotype; C, K, isotypes).
Orthotheca heterocalyx (Bur. & K. Schum.) Pichon, Bull. Soc. Bot. France 92: 226. 1945.

Orthotheca was proposed by Pichon (1945) as a monotypic segregate from *Saldanhaea* primarily because of its single 3-colpate pollen grains with finely granular exine. Unfortunately, Pichon failed to realize that this is exactly the type of pollen found in *Xylophragma*, with which *Orthotheca* agrees in other respects as well. Salient features include interpetiolar glandular fields, dendroid pubescence (in part), rather contracted axillary inflorescences, short, blunt pseudostipules, and puberulous corollas with rather pointed lobes. Taxonomic significance of the unusual frilly margined calyx which characterized this species is not clear, but in some flowers of the type collection the calyx apex has broken off calyptterately, and these differ hardly at all from those of *Xylophragma pratense* (Bur. & K. Shum. ex K. Schum.) Sprague and *X. myrianthum* (Cham.) Sprague.

As is the case with so many of the poorly known monotypic genera of Big-

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noniaceae which have been proposed, proper generic assignment makes specific, much less generic, recognition tenuous. The affinities of *X. heterocalyx,* a very rare species known only from the type collected in 1882, and a single recent collection [*Herringer & Azevedo 9885* (UB) from Minas Gerais, Brazil], are obviously with *Xylophragma pratense* of eastern Bolivia and adjacent Brazil, Peru, and Paraguay. While it is conceivable that it may one day prove to be an extreme of *X. pratense,* the unusual calyx seems adequate for specific recognition in the absence of either geographical or morphological intermediates, and a new combination is in order, though retention of *Orthotheca* is not.

Pachyptera, Hanburyophyton, and *Mansoa*

Mansoa DC., Rev. Bign. (Bibl. Univ. Genève) 12. 1838. LECTOTYPE: *M. hirsuta* DC.

Pachyptera DC. ex Meisn., Gen. 1: 299; 2: 207. 1840. LECTOTYPE: *P. foveolata* DC. = *M. kerere* (Aubl.) A. Gentry.

Adenocalymma sect. *Hanburyophyton* Bur. & K. Schum., Fl. Bras. 8(2): 87. 1896. LECTOTYPE: *A. splendens* Bur. & K. Schum. = *M. difficilis* (Cham.) Bur. & K. Schum.

Chodanthus Hassler, Bull. Herb. Boissier, sér. 2, 6: 151. 1906. TYPE: *C. splendens* (Bur. & K. Schum.) Hassler = *M. difficilis* (Cham.) Bur. & K. Schum.

Pseudocalymma Samp. & Kuhlm., O. Campo (Rio de Janeiro) 4(11): 15. 1933; Bol. Mus. Nac. Rio de Janeiro 10: 101. 1934. TYPE: *P. laevigatum* (Bur. & K. Schum.) Samp. & Kuhlm. = *M. hymenaea* (DC.) A. Gentry.

Onohualcoa Lundell, Contr. Univ. Michigan Herb. 7: 52. 1942. TYPE: *O. seleri* (Loes.) Lundell = *M. verrucifera* (Schlecht.) A. Gentry.

Bayonia Dugand, Caldasia 4:62. 1946. TYPE: *B. helicocalyx* (O. Ktze.) Dugand = *M. verrucifera* (Schlecht.) A. Gentry.

Hanburyophyton (Bur. & K. Schum.) Mello, Arq. Mus. Paranaense 9: 77. 1952.

Few better examples of the problems in generic delimitation which have plagued Bignoniaceae taxonomy exist than that of *Mansoa* and its relatives. The species of this complex are characterized by trifid tendrils, large lavender, purple, or white flowers, the corolla somewhat puberulous outside, at least on the lobes, an open, usually relatively few-flowered inflorescence, relatively (to *Arrabidaea,* etc.) wide linear-oblong fruit, and brownish seed wings hyaline only at the extreme ends. Other noteworthy features include the leaflets usually more or less 3-nerved basally, interpetiolar glandular fields usually present, petiolar glandular fields sometimes present, trifid tendrils, the branchlets subterete, more or less striate, often with a rather loose epidermis, and the vegetative parts often with a conspicuous onion or garlic odor. Members of this group have medium reticulate tricolpate or areolate pollen (see preceding paper).

De Candolle (1838, 1845) assigned most members of this group known by him to the two new genera *Pachyptera* and *Mansoa,* the former characterized by thick-winged (water-dispersed) seeds, the latter by its subulately toothed calyx. In their monumental *Flora Brasiliensis* treatment, Bureau & Schumann (1896–1897), adopting an over-broad concept of *Adenocalymma* as defined mainly by a relatively broad thick capsule, reduced *Pachyptera* to a section of *Adenocalymma.* Although *Mansoa* was theoretically recognized in the *Flora Brasiliensis,* two of the species treated under *Mansoa* were also redescribed with different names in *Adenocalymma* section *Hanburyophyton.* Later authors realized the important differences between the three sections attributed to *Adenocalymma* by

Bureau and Schumann and raised sections *Pachyptera* and *Hanburyophyton* to generic rank, the latter several times. As a result, the nine species of these two sections of the *Flora Brasiliensis* treatment, and several more recently described species related to them, have been apportioned subsequently to no less than nine genera (*Pseudocalymma, Pachyptera, Chodanthus, Hanburyophyton, Mansoa, Onohualcoa, Bayonia, Arrabidaea,* and one species retained in *Adenocalymma* sensu stricto) despite the fact that five of the nine were later considered to be conspecific! Unfortunately, the similarities among the species of these two groups and the similarity of both with *Mansoa* have not been sufficiently emphasized.

Sandwith (1947) remarked on the evident similarities of several of these genera, but actually united only *Bayonia* and *Onohualcoa*. Fabris (1965) merged *Chodanthus* with *Mansoa* on deciding that its type species, *C. praepensus* (Miers) Sandw. [a synonym is *C. splendens* (Bur. & K. Schum.) Hassler] was conspecific with *M. difficilis* (Cham.) Bur. & K. Schum. I have already united *Pseudocalymma* with *Pachyptera* (Gentry, 1973a) and *Onohualcoa* with *Mansoa* (Gentry, 1976). Additional evidence, especially from palynology, suggests the additional mergers of both *Hanburyophyton* and *Pachyptera* with *Mansoa*.

HANBURYOPHYTON

Bureau (1893) first used *Hanburyophyton* in his listing of Glaziou's collections as the generic name for the plant usually known as *Anemopaegma lanceolatum*. *Hanburyophyton* (with the single species *H. xanthinum* Bur.) was not formally described and must be treated as a nomen nudum. Bureau and Schumann (1896–1897) placed *Adenocalymma splendens* [now considered a synonym of *Mansoa difficilis,* see Sandwith (1954) and Fabris (1965)], along with several species later segregated as *Pseudocalymma* (see Gentry, 1973a) in section *Hanburyophyton* of *Adenocalymma*. This was the first valid publication of *Hanburyophyton,* but at the sectional level. Mello (1952) in his posthumously published notes on the Bignoniaceae of Brazil's Paraná State, took *Hanburyophyton* as the generic name for *A. splendens,* which he realized was distinct from *Adenocalymma*. Mello also correctly noted the affinity of his *Hanburyophyton* with *Mansoa*. No Latin description of *Hanburyophyton* was given, but Mello did refer to the *Flora Brasiliensis* treatment and *Hanburyophyton* (Bur. & K. Schum.) Mello appears to be a legitimate generic name. A type species has not been designated for *Hanburyophyton,* but the name has been applied only to *Anemopaegma lanceolatum* (as *H. xanthinum*) and that should be considered the type on historical grounds as well. However, *Anemopaegma lanceolatum,* though clearly distinct from *Anemopaegma,* proves referrable to *Mansoa,* and *Hanburyophyton* may be reduced to the synonymy of that genus.

Mansoa lanceolata (DC.) A. Gentry, comb. nov.

Tabebuia lanceolata DC., Prodr. 9: 213. 1845. LECTOTYPE: Brazil, Rio de Janeiro, *Guillemin 97* (P; MO, P, isolectotypes).

Bignonia xanthinum Mart. ex Bur., Vidensk. Meddel. Naturhist. Dansk Foren. Kjøbenhavn 1893: III. 1894., nom. nud. pro. syn.

Hanburyophyton xanthinum Bur., Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn 1893: III. 1894, nom. nov. for *Tabebuia lanceolata* DC.

Anemopaegma lanceolatum (DC.) Bur. ex K. Schum., Nat. Pflanzenf. 4(3b): 215. 1894.

This misunderstood species was described by de Candolle (1845) citing collections of Lund and Guillemin from the vicinity of Rio de Janeiro. He described the corolla as white as noted by Guillemin. In 1893 Bureau placed *T. lanceolata* in the undiagnosed genus *Hanburyophyton* Bur. giving it the name H.(?) *xanthinum* Bur., based on Martius's earlier, but unpublished, *Bignonia* (*Alsocydia*) *xanthina*. Bureau cited *Glaziou 4713, 4119, 6647,* and *6814,* all from Rio de Janeiro, and doubtfully *Glaziou 4106* as belonging to the species.

There has been much taxonomic confusion of *H. xanthinum,* especially with *Mansoa difficilis*. Several additional collections at Paris have been determined as *H. xanthinum,* including *Glaziou 4109* which is sterile, but certainly a different species (simple tendrils, foliaceous pseudostipules, different leaf texture) probably belonging to *Anemopaegma* and *St. Hilaire s.n.* which is *Mansoa difficilis*. The specimens originally described as *Tabebuia lanceolata* were later transferred to *Anemopaegma* by Bureau (in herb.) and Schumann and most of them were treated as *A. lanceolatum* in the *Flora Brasiliensis*. However, one of the cited specimens (*Glaziou 4106*) was cited as *Adenocalymma splendens* (i.e., a synonym of *Mansoa difficilis*). There are two additional gatherings of this species in the Paris herbarium (*Miers 3080* and *Gardner 78/3*), both identified by Bureau as *Adenocalymma splendens*. (Two of the three sheets of *Miers 3080* at P have also been given different unpublished manuscript names under *Cydista* by Miers.)

The confusion of *Anemopaegma lanceolatum* with *Mansoa difficilis* is not surprising. This species proves to have the distinctive areolate pollen typical of *Mansoa* and is congeneric with *M. difficilis*. In fact, *M. lanceolata* is so close to *M. difficilis* that one might be tempted to treat the two as synonymous. However, the leaves of *M. lanceolata* can (usually) be distinguished from those of *M. difficilis* by their smaller size, more coriaceous texture, and more conspicuous reticulation. Its branches tend to dry darker and its calyx tends to be longer and more evenly truncate than in *M. difficilis*. The corolla is also more tubular with a relatively conspicuous, narrowly tubular basal portion; that of *M. difficilis* is more or less tubular-infundibuliform without a long and narrowly tubular basal portion.

The fruits of *M. lanceolata* have not been described, although one of the sheets of *Miers 3080* includes an immature fruit which is linear, 23 cm long, 9 cm wide, flat, drying black, scattered lepidote but otherwise glabrous, longitudinally striate-wrinkled, with the midline slightly raised. The fruit of *Hanburyophyton* is thus similar to that of *Mansoa* and utterly unlike the elliptic fruit of *Anemopaegma,* supporting its reduction to *Mansoa*.

The only anomalous characteristic is the yellow flower color (described as white by at least one collector) which I suspect is more cream than yellow and thus not completely out of place in an otherwise purple (or white)-flowered genus.

PACHYPTERA

As originally established by de Candolle, *Pachyptera* was primarily characterized by thick coriaceous seed wings. As orginally delimited, the genus was a hodgepodge of six species—the four for which flowering material was known are all synonymous with *Paragonia pyramidata* and another is referrable to *Macfadyena uncata* (Andr.) Sprague & Sandw. Only the type, now known as *P.*

kerere (Aubl.) Sandw., is referrable to *Pachyptera* as resurrected by Sprague & Sandwith (1932). Subsequently, I (Gentry, 1973a) have merged *Pseudocalymma,* characterized especially by its onion or garlic smell, with *Pachyptera,* while raising Dugand's *P. kerere* var. *erythraea* to species status and describing a rather anomalous microphyllous appressed-climbing species as *Pachyptera parvifolia*. Thus as currently constituted *Pachyptera* contains seven species, and is separated from *Mansoa* by the presence of interpetiolar (except *P. parvifolia*) and petiolar (usually) glandular fields, more evenly truncate calyces, a tendency to vertically seriate pseudostipules, ovules biseriate rather than ca. 4-seriate in each locule, frequent vegetative smell of garlic, and most important, tricolpate rather than areolate pollen grains.

New evidence has undermined most of these potential differentiating characters between *Pachyptera* and *Mansoa*. Merger of *Onohualcoa* with *Mansoa* includes species with the ovules biseriate in each locule in that genus. Several species of *Mansoa,* including its type, are now known to have an onion odor vegetatively. The new species described below is like *Pachyptera* in most features but has its subulate pseudostipules paired side by side rather than vertically seriate.

Only the palynological difference between 3-colpate *Pachyptera* and areolate *Mansoa* remains as a definitive separating character. However, the palynological survey reported in the preceding paper reveals that some species of *Pachyptera* actually have areolate pollen. This is true even within the group of three onion-smelling species formerly segregated as *Pseudocalymma,* which are so closely related that Sandwith (1954) considered them to be conspecific. *Pachyptera alliacea* has areolate pollen, *P. standleyi* has 3-colpate pollen, and *P. hymenaea* sensu lato may apparently have both pollen types plus an intermediate irregularly syncolpate form. Clearly pollen is too variable in this group to be a taxonomically reliable character for generic separation and the merger of *Pachyptera* with *Mansoa* seems in order.

The additional species of *Mansoa* are:

Mansoa alliacea (Lam.) A. Gentry, comb. nov.

Bignonia alliacea Lam., Encycl. 1: 421. 1785. TYPE: French Guiana, *Aublet s. n.* (P-AD).
Pseudocalymma alliaceum (Lam.) Sandw., Recueil Trav. Bot. Néerl. 34: 210. 1937.
P. alliaceum (Lam.) Sandw. var. *microcalyx* Sandw., Kew Bull. 1953: 467. 1954 (pro parte). TYPE: French Guiana, *Sagot 418* (K, holotype; BM, US, W, isotypes).
Pachyptera alliacea (Lam.) A. Gentry, Brittonia 25: 236. 1973.

Mansoa erythraea (Dugand) A. Gentry, comb. nov.

Pachyptera kerere var. *erythraea* Dugand, Caldasia 7: 16. 1955. TYPE: Colombia, Santander, *Romero-Castañeda 4727* (COL).
Pachyptera kerere (Dugand) A. Gentry, Phytologia 35: 186. 1977.

Mansoa hymenaea (DC.) A. Gentry, comb. nov.[3]

Bignonia hymenaea DC., Prodr. 9: 158. 1845. TYPE: Brazil, Bahia, *Blanchet 1434* (G-DC, holotype; P, isotype).

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[3] For complete synonymy (22 entries) see Gentry (1973b).

Pachyptera hymenaea (DC.) A. Gentry, Brittonia 25: 236. 1973.

Mansoa kerere (Aubl.) A. Gentry, comb. nov.

Bignonia kerere Aubl., Hist. Pl. Guiane Fr. 2: 644, *tab. 260*. 1775, non Lindl. TYPE: French Guiana, *Aublet s.n.* (BM, P-AD no. 12271, W).
Pachyptera kerere (Aubl.) Sandw., Recueil Trav. Bot. Néerl. 34: 219. 1937.

Mansoa kerere (Aubl.) A. Gentry var. *incarnata* (Aubl.) A. Gentry, comb. nov.

Bignonia incarnata Aubl., Hist. Pl. Guiane Fr. 2: 645, *tab. 261, 262, figs. 1–8*. 1775. TYPE: not seen.
Pachyptera kerere var. *incarnata* (Aubl.) A. Gentry, Brittonia 25: 235. 1973.

Mansoa parvifolia (A. Gentry) A. Gentry, comb. nov.

Pachyptera parvifolia A. Gentry, Phytologia 26: 448. 1973. TYPE: Colombia, Sur de Santandar, *Haught 2179* (MO).

Mansoa standleyi (Steyerm.) A. Gentry, comb. nov.

Pseudocalymma standleyi Steyerm., Publ. Field Mus. Nat. Hist., Bot. Ser. 23: 235. 1947. TYPE: Guatemala, Quetzaltenango, *Steyermark 33533* (F).
Pseudocalymma alliaceum var. *macrocalyx* Sandw., Kew Bull. 1953: 468. 1954. TYPE: British Guiana, Demerara River, *Jenman 6752* (K, holotype; NY, isotype).

Besides the above new combinations, an additional new species of *Mansoa*, referrable to the former *Pachyptera*, remains to be described:

Mansoa ventricosa A. Gentry, sp. nov.

Frutex scandens, ramuli teretes, consociebus glandularum in nodis inter petioles; pseudostipulae subulatae; folia bifoliata, interdum cirrho trifido, foliolis anguste ellipticis; inflorescentia floribus in panicula terminali dispositis; calyx cupulatus, minute 5-denticulatus, aliquantum lepidotus; corolla alba, ventricose infundibuliformi-campanulata super basem tubularem, extus puberula; stamina exserta, thecis parallelis; ovarium lineari-oblongum, ovulis in quoque loculo biseriatis; discus globosus; capsula ignota.

Liana; branchlets terete, minutely subpuberulous but ± glabrate, finely and evenly striate, drying brown, without noticeable lenticels; pseudostipules subulate, paired, ca. 3 mm long (cf. *Ceratophytum*); nodes with interpetiolar glandular fields. Leaves 2-foliolate, sometimes with a trifid tendril, elliptic or narrowly elliptic, acute to long-acuminate, cuneate to rounded at the base, 6–14 cm long, 1.8–7 cm wide, chartaceous, the main veins slightly raised below, glabrous above and below except for a few minute lepidote scales, drying olive above and below; petiolules 0.7–1.5 cm long, petiole 1.5–2.5 cm long, flattened above, glabrous or very slightly puberulous above. Inflorescence a terminal panicle with a well-developed central axis, somewhat puberulous and lepidote, the lower lateral branches with 2–3 flowers, the upper with 1; bracts and brateoles minute, scarcely evident; pedicels 1–2 cm long. Flowers with the calyx cupular, truncate, minutely 5-denticulate, 5–7 mm long, 5–7 mm wide, somewhat lepidote, very slightly puberulous, with irregular trichomes, the margin densely ciliate, with fields of plate-shaped glands near the margin; corolla white, conspicuously and ventricosely infundibuliform-campanulate above a 1.5 cm long tubular base, 4.3–5 cm long, 1.5–2 cm wide at the mouth of the tube, the tube 3–3.5 cm long, the lobes narrow,

1–1.5 cm long, the lobes puberulous outside, puberulous and glandular-lepidote inside, the tube outside densely puberulous above, glabrous on the narrowly tubular base, conspicuously glandular lepidote just above the base, the tube mostly glabrous within, villous with long trichomes at the base of the stamens; stamens didynamous, inserted 12–15 mm above the base of the corolla tube, the anthers exserted, the thecae parallel, 5–6 mm long, the pollen medium reticulate, 3-colpate, the longer filaments 3(+) cm long, the shorter filaments 2.7–2.9 cm long, the staminode 4 mm long; pistil ca. 5 cm long, the ovary linear-oblong, 4 mm long, 1 mm wide, subterete, densely puberulous, the ovules 2-seriate in each locule; disc spherical, contracted at the top into the base of the ovary, 2.5–3 mm in diameter. Fruit unknown.

TYPE: BRAZIL. PARA: Km. 345 along Belém-Brasilia highway, flowers white, 9 Aug. 1963, *B. Maguire, J. Murça-Pires, C. K. Maguire & N. T. Silva 56083* (MO, holotype; COL, NY, isotypes).

Additional collection examined: BRAZIL. MARANHÃO: 15 km s of Para-Maranhão border on Belém-Brasilia highway, liana, flowers white, in forest, 31 Aug. 1963, *Prance & Silva 58978* (UB).

Generic placement of this distinctive new species is somewhat problematical, expecially in the absence of fruit. Features such as trifid tendrils, striate branchlets, lack of petiolar glandular fields, and noticeably greater density of the corolla pubescence on the lobes in bud suggest *Mansoa* sensu stricto, which differs especially in lacking interpetiolar glandular fields and in having areolate pollen. *Pachyptera* shares most of those features as well as tricolpate pollen. The subulate pseudostipules are out of place in either *Pachyptera* or *Mansoa* and are remarkably like those of monotypic *Periarrabidaea,* which differs in light yellow tubular-infundibuliform corollas and pollen with a very finely reticulate almost psilate exine, but is vegetatively similar. Merger of *Pachyptera* and *Mansoa* makes generic assignment of intermediate *M. ventricosa* easier. However, its corolla shape is unlike any species of *Mansoa* or *Pachyptera* and is perhaps more like that of *Martinella,* a genus also similar in an unusual coarsely reticulate tricolpate pollen. The existence of this interesting intermediate species combining the features of so many genera would seem to undermine generic separation not only of *Pachyptera* and *Mansoa* but also of *Periarrabidaea* and perhaps even *Martinella* and *Leucocalanthe*.

NEVES-ARMONDIA AND *PITHECOCTENIUM*

Pithecoctenium hatschbachii A. Gentry, nom. nov.

Pithecoctenium cordifolium DC., Prodr. 9: 194. 1845, non Mart., Flora 24(2), Beibl. 48. 1841. TYPE: Brazil, São Paulo, *Martius 408* (M).

Neves-Armondia cordifolia K. Schum., Engl. & Prantl., Nat. Pflanzenf. Nachtrag 1: 302. 1897, based on *Pithecoctenium cordifolium* "Mart." (i.e. *P. cordifolium* DC.).

The single species of monotypic *Neves-Armondia* is so similar to *Pithecoctenium* that Martius (in herb.), followed by de Candolle (1845), identified his collection of *Neves-Armondia* with a plant from Cuyaba which he described as *P. cordifolium* but which is actually referrable to widespread *P. crucigerum* (L.) A. Gentry. In *Flora Brasiliensis,* Bureau & Schumann (1896–1897) noted the

glabrous ovary, unique in *Pithecoctenium*, of Martius's São Paulo collection and several other gatherings from coastal Brazil. Excluding the type from *P. cordifolium* Mart., they treated these under that name as a separate section *Leiogyne*. Subsequently, Schumann (1897) received a collection of the fruit of this species from Neves-Armond and was persuaded by its nonechinate surface to erect for the species a new genus, *Neves-Armondia*. The pollen of *Neves-Armondia* is exactly that of *Pithecoctenium*, as are the flowers (except the glabrous ovary) and all vegetative features. The vegetative characters (pellucid green-drying leaves) listed as diagnostic of section *Leiogyne* by Bureau and Schumann are actually shared with *P. crucigerum*, and *Neves-Armondia* cannot be distinguished from *P. crucigerum* in the absence of fruit without dissecting a flower to examine the ovary.

Since the epithet "cordifolium" is preempted in *Pithecoctenium*, return of this species to that genus necessitates a nomen novum. I have selected an epithet commemorating Gert Hatschbach, from whom I have received beautiful material of this rare plant and other Brazilian Bignoniaceae.

Paradolichandra and *Parabignonia*

Parabignonia chodatii (Hassler) A. Gentry, comb. nov.

Paradolichandra chodatii Hassler, Bull. Herb. Boissier, sér. 2, 7: 720. 1907. TYPE: Paraguay, Sierra de Amambay, *Hassler 10281* (*coll. Rojas*) (NY).

Monotypic, rarely collected *Paradolichandra* of Paraguay and adjacent parts of Brazil, Bolivia, and Argentina was described by Hassler (1907) in the absence of fruiting material as a new genus of Tecomeae because of its affinity with *Dolichandra*, which has fruits dehiscent perpendicular to the septum, but is anomalous in that tribe in being a tendrillate liana. *Paradolichandra* was also compared by Hassler with *Parabignonia*, the other tendrillate genus usually assigned to Tecomeae. Although *Paradolichandra* is adequately separated from *Dolichandra*, which differs especially in a spathaceous calyx, stipitate ovary and fruit, tubular strongly bilabiate corolla, and exserted anthers with parallel thecae, its separation from poorly known *Parabignonia* is more tenuous. The differentiating characters listed by Hassler are: lepidote calyx, sessile ovary, ovules multiseriate in each locule, and a paniculate inflorescence. Hassler provided a key to these genera, all monotypic, (also to the illegitimate *Odontotecoma* which Sandwith (1959) demonstrated to have been based on a mixed collection) which emphasized the additional character of a double disc in *Paradolichandra* versus a simple disc in *Parabignonia*.

Fabris (1965, Meyer & Fabris, 1953) reported *Paradolichandra* from the Yungas region of northwest Argentina and described its fruit for the first time. The fruit of *Paradolichandra* proved to be linear and loculicidal, exactly like that of *Parabignonia*. Despite his description of its fruit as loculicidal, Fabris placed *Parabignonia* with Bignonieae in his treatment of Bignoniaceae for *Flora Argentina*, although he retained *Dolichandra* itself in Tecomeae. The "double" disc of *Paradolichandra* as figured by Fabris is actually conical with an indistinct groove separating its apical and basal portions.

Sandwith (1966) described a second species of *Parabignonia* and discussed

the relationships of *Paradolichandra*, *Dolichandra*, and *Parabignonia*. Retaining them in Tecomeae, he noted the close relationship of the three genera and suggested that *Paradolichandra* might have to be reduced to *Parabignonia*. As summarized by Sandwith, the only differences between *Paradolichandra* and *Parabignonia* are the former's densely lepidote calyx, glabrous outer surface of the corolla, and double disc. Sandwith also emphasized that *Parabignonia* and *Dolichandra* had been described by Urban (1916) and Gomes (1955) as having pollen with a distinctly granular or microreticulate exine while *Paradolichandra* was variously described as having either a smooth or a reticulate exine.

It seems evident that these characters are inadequate for generic differentiation, especially as they are all a matter of degree. The calyx of *Parabignonia steyermarkii* Sandw. is also somewhat lepidote. One species of *Parabignonia* has the corolla tube puberulous outside, while the other has the tube glabrous, just as in *Paradolichandra*, though the lobes are puberulous. The disc of *Parabignonia* also has a tendency toward a basal annulus. Both genera have sessile ovaries with the ovules irregularly 3–5-seriate in each locule. The pollen of both *Paradolichandra* and *Parabignonia* proves to be similarly tricolpate and psilate-foveolate (see above), clinching the argument for their merger.

Tribal reassignment of *Dolichandra* and *Parabignonia* is also supported by the palynological evidence. The almost psilate pollen of *Dolichandra* and *Parabignonia* would ally them in Bignonieae with *Macfadyena* and *Melloa*, which have similar large calyces, trifid more or less uncate tendrils, and multiple phloem arms in stem cross-section. Although *Macfadyena* has fruit dehiscence parallel to the septum, *Melloa* has apparently 4-valved fruits with each valve splitting in half and is thus dehiscent both parallel to and perpendicular to the septum. *Parabignonia* was described as having dehiscence perpendicular to the septum, but only two immature fruits of the genus have been available for study, the collection on which Bureau & Schumman's (1896–1897) description was based apparently having been destroyed in Berlin. Recently I received from G. Hatschbach a beautiful fruiting collection of *Parabignonia unguiculata* (Vell.) A. Gentry (*Hatschbach 39143*, Porto Barreiro, Paraná, Brazil). The mature fruit is clearly "4-valved," dehiscent both parallel to and perpendicular to the septum as in *Melloa*. Moreover, the capsule valves of both *Macfadyena* and *Dolichandra* are occasionally centrally split [e.g., *Croat 9151* (MO) for *Macfadyena*; *Pederson 4541* (MO) for *Dolichandra*], strongly suggesting that direction of fruit dehiscence in this group does not have the same taxonomic significance as elsewhere in the family. Despite their differences in fruit dehiscence, these genera form a natural group.

On the other hand, the almost psilate pollen of *Dolichandra* and *Parabignonia* would ally them in Tecomeae only with *Jacaranda* and *Digomphia*, genera which are utterly different in every other respect. That the palynological evidence suggests affinities with a morphologically similar group in Bignonieae but not in Tecomeae provides additional evidence in favor of their tribal transfer to Bignonieae.

LITERATURE CITED

BUREAU, E. 1893. Symbolae ad floram Brasiliae centralis cognoscendam, ed. Warming. Vidensk. Meddel. Dansk Naturhist Foren. Kjøbenhavn 1893: 96–118.

——— & K. SCHUMANN. 1896–1897. Bignoniaceae. *In* Martius, Flora Brasiliensis 8(2): 1–452.
CANDOLLE, A. P. DE. 1838. Revue Sommire de la Famille des Bignoniacées. Bibl. Univer. Genève 1–24.
———. 1845. Prodromus Systematis Naturalis Regni Vegetabilis 9: 142–248. Paris.
FABRIS, H. A. 1965. Bignoniaceae. *In* Flora Argentina. Revista Mus. La Plata, Nueva Serie, Bot. 9: 273–419.
GENTRY, A. H. 1973a. Generic delimitations of Central American Bignoniaceae. Brittonia 25: 226–242.
———. 1973b [1974]. Bignoniaceae. *In* Flora of Panama. Ann. Missouri Bot. Gard. 60: 781–997.
———. 1976. Studies in Bignoniaceae 19: Generic mergers and new species of South American Bignoniaceae. Ann. Missouri Bot. Gard. 63: 46–80.
GOMES, J. C., JR. 1955. Contribuição a sistemática das Bignoniaceae Brasileiras. Arq. Serv. Florest. 9: 261–296.
HASSLER, E. 1907. Un genre nouveau de Bignoniacées. Plantae Paraguarienses novae vel minus cognitae V. Bull. Herb. Boissier, sér. 2, 7: 718–722.
MELLO, J. C. DE. 1952. Bignoniaceas paulistanas. Arq. Mus. Paranaense 9: 1–206.
MEYER, T. & H. A. FABRIS. 1953. Dos géneros de Bignoniáceas nuevos para la flora Argentina. Lilloa 26: 347–351.
PICHON, M. 1945. Notes sur les Bignoniacées. Bull. Soc. Bot. France 92: 222–227.
SANDWITH, N. Y. 1947. *Bayonia* Dugand. Kew Bull. 1946: 87–88.
———. 1954. Contributions to the flora of tropical America. LVI. Further studies in Bignoniaceae. Kew Bull. 1953: 451–484.
———. 1959. Contributions to the flora of tropical America: LXIV. Studies in Bignoniaceae, XXIII: *Odontotecoma* and *Memora fulgens*. Kew Bull. 13: 420–426.
———. 1966. Bignoniaceae. *In* J. A. Steyermark, Botanical novelties in the region of Sierra de Lema, Estado Bolívar, Venezuela—III. Bol. Soc. Venez. Ci. Nat. 26: 446–452.
SCHUMANN, K. 1897. Bignoniaceae. *In* A. Engler & K. Prantl, Die natürlichen Pflanzenfamilien Natchtrag und Register zu Teil II–IV: 301–304. Wilhelm Engelmann, Leipzig.
SPRAGUE, T. A. & N. Y. SANDWITH. 1932. Contributions to the flora of tropical America: X. Bull. Misc. Inform. 1932: 81–93.
URBAN, I. 1916. Über Ranken und Pollen der Bignoniaceen. Ber. Deutsch. Bot. Ges. 34: 728–758.